WHITEWATER LAKE
Union County

2004 Fish Management Report

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EXECUTIVE SUMMARY

- Whitewater Lake is a 199-acre impoundment located within Whitewater Memorial State Park. The state park is located approximately 2 mi southwest of Liberty, Indiana. A boat ramp, handicapped-accessible pier, and several shoreline areas provide access to the lake for fishing.

- A fisheries survey was conducted from May 24 to 26, 2004 to evaluate the predator/prey balance, and evaluate age, growth, and recruitment of dominant sportfish.

- A total of 929 fish representing 12 species was collected with an estimated weight of 379.17 lbs. The four most abundant species collected by number were bluegill (51%), largemouth bass (18%), white sucker (12%), and channel catfish (10%). The four most abundant species collected by weight were white sucker (39%), bluegill (21%), channel catfish (17%), and largemouth bass (16%).

- Bluegill ranged in length from 1.3 to 8.7 in, averaged 5.8 in, and 56% were considered harvestable size (6 in or larger). Growth was well above average at ages 2 and 3. Approximately 89% of the bluegill collected were age 2.

- Largemouth bass ranged in length from 3.7 to 17.9 in and averaged 9.0 in. Approximately 75% of the bass collected were age 2 and ranged in length from 6.5 to 13.5 in. Growth was well above average at ages 2 and 3.

- Redear ranged in length from 4.3 to 9.1 in and averaged 7.5 in. Approximately 81% of the redear were harvestable size (6 in or larger). Growth of redear sunfish was average at age 2 and slightly above average at age 3. No age-1 fish were collected.

- Eight black crappie that weighed a combined 2.32 lbs were collected. Black crappie ranged in length from 7.1 to 9.2 in and averaged 8.2 in. All crappie collected were age 2.

- Channel catfish ranged in size from 7.8 to 17.8 in long and averaged 12.7 in. Roughly 64% of the channel catfish collected were considered harvestable size (12 in or larger). Biennial stockings of 3,323 channel catfish (8 in or larger) are recommended.

- The fishery should be resurveyed in 2007 to evaluate the predator/prey balance and to determine age, growth, abundance, and recruitment of the dominant sportfish.

INTRODUCTION

Whitewater Lake is a 199-acre impoundment located within Whitewater Memorial State Park. The state park is located approximately 2 mi southwest of Liberty, Indiana. A boat ramp, handicap-accessible pier, and several shoreline areas provide access to the lake for fishing.

Originally constructed in 1949, the spillway has been repaired several times over the past several decades. Finally in 1996, it was determined that the spillway was beyond repair and it was more cost-effective to replace it. Replacing the spillway required significantly lowering the lake. Since the water level was already going to be lowered and the sport fishery was limited by gizzard shad and carp, this was an opportune time to conduct a total lake renovation. Construction of the new spillway and renovation took place in 2001. Whitewater Lake was restocked in November 2001 and during the early spring 2002 with bluegill, largemouth bass, redear sunfish, and channel catfish (Table 1).

A fisheries survey was conducted in 2002 to evaluate the success of the initial fish stockings and renovation. No gizzard shad and very few common carp were collected. As a result, an abundant and diverse community of submersed aquatic vegetation was present. All stocked fish were well represented during the survey. A good percentage of the largemouth bass and bluegill collected were young-of-the-year (YOY) fish indicating successful recruitment. Since the initial stockings of bluegill and redear sunfish were successful, 21,500 black crappie (2.0 in) were stocked in October 2002. To boost the redear sunfish population, an additional 56,700 fingerlings (1.2 in) were stocked in December 2002.

The goal of the 2004 fisheries survey at Whitewater Lake was to assess the development of the fishery. The age, growth, and recruitment of dominant sportfish were also evaluated.

METHODS

The survey was conducted from May 24 to 26, 2004. Physical and chemical characteristics were collected for water quality and measured in the deepest area of the lake according to the Manual of Fisheries Survey Methods (Shipman 2001). Submersed aquatic vegetation was sampled on July 14, 2004, using guidelines written by Pearson (2004).

Fish were collected using three sampling gears. Pulsed DC night electrofishing was conducted for 1.0 h with two dippers. Four trap nets and eight experimental-mesh gill nets were also fished overnight. All fish collected were measured to the nearest 0.1 in TL. Average

weights for Fish Management District 5 were used to estimate the weight of all fish. Scales were taken from largemouth bass, bluegill, redear sunfish, and black crappie for age and growth analysis. Proportional stock density (PSD) was calculated for largemouth bass and bluegill (Anderson and Neumann 1996). The Bluegill Fishing Potential Index (BGFP), developed by Ball and Tousignant (1996) was utilized to describe the bluegill fishing opportunities at Whitewater Lake.

RESULTS

Water temperature at Whitewater Lake on May 24, 2004 was not measured. Dissolved oxygen was 12 parts per million (ppm) at the surface and 3 ppm at 30 ft. Conductivity was 440 µS and the Secchi disk reading was nearly 7 ft.

Eight species of submergent aquatic vegetation were collected. Coontail, American pondweed, leafy pondweed, brittle naiad, and sago pondweed were most prevalent. The maximum depth of submergent vegetation growth was 16.5 ft. The mean rake score for all sampling locations was 1.31 and the maximum number of species found per site was six. Non-submergent vegetation observed included arrowhead and filamentous algae.

Altogether, 929 fish representing 12 species were collected with an estimated weight of 379.17 lbs. The four most abundant species collected by number were bluegill (51%), largemouth bass (18%), white sucker (12%), and channel catfish (10%). The four most abundant species collected by weight were white sucker (39%), bluegill (21%), channel catfish (17%), and largemouth bass (16%).

A total of 472 bluegill weighing an estimated 80.99 lbs was collected. Electrofishing yielded a CPUE of 309.0 bluegill/h. Bluegill ranged in length from 1.3 to 8.7 in and averaged 5.8 in. Fifty-six percent of the bluegill collected were harvestable size (6 in or larger). Bluegill PSD was 50. The BGFP score was 28, which qualifies the bluegill fishery as excellent. Compared to other lakes in central Indiana, bluegill growth was average at age 1 and well above average at ages 2 and 3. Approximately 89% of the bluegill collected were age 2.

A total of 166 largemouth bass that weighed over 62 lbs was collected. Electrofishing yielded a CPUE of 161.0 bass/h. Largemouth bass ranged in length from 3.7 to 17.9 in and averaged 9.0 in. Approximately 75% of the bass collected were age 2. The 2002 year class ranged in length from 6.5 to 13.5 in. Only 4% of the largemouth bass collected met or exceeded

the 14-in minimum length limit. Largemouth bass PSD was 17. Growth of bass was slightly above average at age 1 and well above average at ages 2 and 3. The average length of largemouth bass at age 3 was 12.6 in.

One hundred eight white suckers that weighed 148.73 lbs were collected. White suckers ranged in length from 9.2 to 17.8 in and averaged 14.1 in.

Ninety-five channel catfish were collected that weighed an estimated 63.48 lbs. Channel catfish ranged in size from 7.8 to 17.8 in long and averaged 12.7 in. Roughly 64% of the channel catfish collected were considered harvestable size (12 in or larger).

Thirty-two redear sunfish that weighed 10.94 lbs were collected. Redear ranged in length from 4.3 to 9.1 in and averaged 7.5 in. Approximately 81% of the redear were harvestable size (6 in or larger). Only age-2 and age-3 redear sunfish were collected. Growth of redear sunfish was average at age 2 and slightly above average at age 3.

Eight black crappie that weighed a combined 2.32 lbs were collected. Black crappie ranged in length from 7.1 to 9.2 in and averaged 8.2 in. All crappie were age 2 and were caught in gill nets (1.0/lift). Crappie growth was well above average at age 2.

Other species collected were green sunfish, longear sunfish, yellow bullhead, common carp, black bullhead, and bluntnose minnow. Together these species comprised 5% of the sample by number and 3% by weight.

DISCUSSION

The fishery at Whitewater Lake is developing nicely since the 2001 renovation. Bluegill up to 8.7 in were collected and over 50% were of harvestable size. Few largemouth bass over 14 in were collected but, like bluegill, there was an abundant age-2 year class. The number of bass over 14 in should increase substantially as the 2002 year class matures. Age-2 and older largemouth bass and bluegill grew exceptionally well. Good growth was expected and can be attributed to the availability of abundant food resources and the lack of competition that typically exists in new or recently renovated impoundments.

Age-1 redear sunfish and black crappie were not collected in the present survey. Even though this could have been the result of sampling bias (age-1 sunfish are typically too small to be sampled effectively), it was likely due to the absence of sexually mature redear and crappie within each population. According to Pflieger (1997), redear sunfish and black crappie are not

sexually mature until age 2 or 3. Now that the stocked populations of redear and crappie are older, their reproductive success will likely improve.

While showing good numbers and average size in 2004, channel catfish are usually unable to sustain their population in small impoundments due to limited spawning habitat and predation of YOY catfish by largemouth bass. Additionally, yellow and black bullhead populations are not providing a significant contribution to the fishery. Therefore, in order to maintain a quality catfish fishery, biennial stockings of 3,323 channel catfish (8 in or larger) should continue.

The abundance of stream fish such as white sucker, green sunfish, and longear sunfish increased between 2002 and 2004. These fish are found throughout the watershed and can become somewhat problematic if an adequate predator population is not sustained. However, the maturing largemouth bass population will likely be able to control these fish and prevent them from reaching nuisance levels.

The abundance and diversity of submersed vegetation increased following the renovation. Submergent vegetation is beneficial due to the cover and refuge it provides fish. Too much or too little vegetation can create an unbalanced fishery. Currently, the amount of vegetation present does not appear to be limiting the fishery, and therefore, no large-scale vegetation treatments are recommended. However, vegetation control in high use areas (i.e., beach, boat ramp, courtesy pier) may be necessary if access becomes limited. State park personnel should monitor vegetation in high use areas and advise fisheries management staff before the amount of coverage reaches nuisance levels. Fisheries personnel will assist in assessing the problem, determining what course of action to take, and conducting treatments if necessary. The state park is responsible for purchasing herbicides used for vegetation control.

Even though the fishery at Whitewater Lake is still developing, anglers targeting bluegill should be successful. Quality redear sunfish, black crappie, and channel catfish are also contributing to the fishery. Populations (size and number) of largemouth bass and panfish should improve in the near future as long as a good predator/prey balance is maintained. To retain this balance and sustain good growth, anglers are encouraged to release largemouth bass over 14 in. The next fisheries survey is scheduled for 2007 and will focus on evaluating the predator/prey balance as well as determining the age, growth, abundance, and recruitment of the dominant sportfish.

RECOMMENDATIONS

- The fishery should be resurveyed in 2007 to evaluate the predator/prey balance and determine the age, growth, abundance, and recruitment of the dominant sportfish.

- The Division of Fish and Wildlife should continue biennial stockings of 3,323 channel catfish. Stocked fish should average at least 8 in.

- No vegetation control should be conducted other than in high use areas where access is limited.

LITERATURE CITED

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Table 1. Species, number, average length, and date fish were stocked at Whitewater Lake after the 2001 renovation.

Species	Number	Average length (in)	Date (mo/yr)
Bluegill	150,000	0.8	11 / 01
Redear sunfish	99,570	0.9	11 / 01
Largemouth bass	30,000	4.3	11 / 01
Channel catfish	9,970	8.3	11 / 01
Channel catfish	15,500	3.6	3 / 02
Largemouth bass	220	11.5	4 / 02